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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,470	02/27/2002	Hiroshi Noguchi	040679-1450	5815
22428	7590	03/16/2004		
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER MAYEKAR, KISHOR	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 03/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/083,470

Applicant(s)

NOGUCHI ET AL.

Examiner

Kishor Mayekar

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/391,464.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/27/02 & 8/22/02.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5, 13, 15 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, the phrase "means for changing an amount of said acid solution" uses a "means" clause to recite a claim element as a means for performing a specified function (emphasis added). However, since the recited changing an amount of the acid solution added to the liquid is actually not a function, it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph (emphasis added).

In claim 13, the same is applied to claim 5 to the phrase "means for adjusting pH".

In claim 15, the same is applied to claim 13.

In claim 18, the same is applied to claim 13.

***Claim Rejections - 35 USC § 102 and § 103***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by MILLS et al. ("Bromate Removal from Drinking Water by Semiconductor Photocatalysis", Water Res. (1996), vol. 30, No. 9, pp. 1973-1978, Elsevier Science Ltd., Great Britain), a reference cited by Applicant. MILLS discloses a study of using platinized titanium dioxide to photocatalyze the decomposition of bromate ions in tap water to bromide ions and oxygen by 254 nm UV light. In the experimental section in pages 1974-1976 Mills discloses that the study is provided with an apparatus comprised all the structures as claimed.

6. Claims 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over MILLS et al. MILLS as applied above further discloses in the first paragraph of the right column on page 1976 the effect of pH on the study. The differences between MILLS and the instant claims are each of the subject matters recited in the instant claims.

As to the subject matter of claim 4, the provision of means for adding an acid solution to the liquid, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teachings because it has been settled that proper

adjustment of a known effective variable of a known or obvious process is within the capabilities of one having ordinary skill in the art. *In re Aller* 105 USPQ 233; *In re Boesch* 205 USPQ 215.

As to the subject matter of claim 5, the provision of mechanical means or automatic means to replace manual activity has been held to be obvious, *In re Venner* 120 USPQ 192.

As to the subject matter of each of claims 6-10, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teachings because it has been held on the intended use of a device that apparatus claims cover what a device is, not what a device does and that an apparatus claim may be obvious even if it operates in the same way as the prior art as long as there are structural differences. *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ 2d 1525.

7. Claims 11-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over MILLS et al. MILLS as applied above discloses the use of drinking water as the sample for the study (see the above Experimental section); that it is common drinking water practice that the drinking water has been

ozonated (see the paragraph crossing the left and right columns in page 1973); and the use of air-saturated drinking water (the last paragraph in the right column of page 1975). The differences between MILLS and the instant claims are each of the subject matters recited in the above claims.

As to the subject matter of claim 11, the provision of the recited first and second sections before the section for generating therein the photocatalytic reaction, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teachings because duplication of parts was held to have been obvious. In re Harza 124 USPQ 378.

As to the subject matter of claim 13, the rejection as set forth in paragraph #7 above is applied to the means for adjusting pH.

As to the subject matter of claim 14, the provision of the recited first section before the section for generating therein the photocatalytic reaction, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teachings because duplication of parts was held to have been obvious. In re Harza 124 USPQ 378.

As to the subject matter of claim 15, the rejection as set forth in paragraph #7 above is applied to the means for adjusting pH.

As to the subject matter of claim 19, the provision of the recited first and second sections before the section for generating therein the photocatalytic reaction, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the reference's teachings because duplication of parts was held to have been obvious.

In re Harza 124 USPQ 378.

8. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over MILLS et al. in view of either of STEVENS et al. (5,104,550) or HILL et al. (5,637,231). The difference between the reference as applied above and the above claim is the provision of the recited second section. STEVENS in an oxidation and photooxidation process shows the addition of ozone and the irradiation with UV to treat oxidizable contaminants (col. 5, lines 6-12). HILL shows the same in an apparatus for treating pollutant streams (paragraph crossing cols. 1 and 2). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the



reference's teachings as suggested by either STEVENS or HILL because the selection of any of known equivalent device for treating oxidizable contaminants in water would have been obvious to one having ordinary skill in the art.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over MILLS et al. as applied to claims 11-15 and 19 above, and further in view of either of STEVENS et al. (5,104,550) or HILL et al. (5,637,231) for the same reason as set forth in the paragraph #8 above.

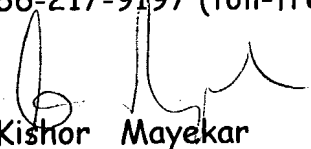
*Prior Art*

10. All the references cited in the International Search Report have been considered by the Examiner.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is (571) 272-1339. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kishor Mayekar  
Primary Examiner  
Art Unit 1753